TARGETING DEVELOPMENT PROGRAMS ON THE MOST BENEFICIAL INDUSTRIES: A CASE STUDY FOR ATHENS, OHIO

by

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I. SUMMARY AND RECOMMENDATIONS

Sixty manufacturing industries were recommended by James Jennings Associates as targets for an industrial development program.[1/] The purposes of this study are to estimate the economic impacts of each industry and to identify the most desirable industries for Athens County. In addition, this paper examines the outlook for the Athens County economy and assesses the impacts of the local governments using tax abatements or capital expenditures as inducements for attracting new jobs.

The study was conducted by the GROW Community Development Project at the request of the Athens Industrial Development Commission. The recommendations and the summary of the research are presented in Section I. Section II reviews the economic outlook for the major employers in Athens County. Section III describes the economic impacts of the sixty manufacturing industries recommended for Athens County by James Jennings Associates. Three means by which local government can stimulate the community's growth are described in Section IV. The budgetary impacts of using tax abatements and capital expenditures on industrial sites are examined for the nine best industries. Several programs for encouraging

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1/ Jennings, 1979.

*By George Morse, Resource Economist, Department of Agricultural Economics and Rural Sociology, The Ohio Agricultural Research and Development Center and The Ohio State University, ESO 733, 1980.

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the expansion of existing small business are covered in Section V.

Only manufacturing industries are considered in this study. This limitation was accepted for three reasons: (1) the Jennings report only dealt with manufacturing industries; (2) the data available for manufacturing firms were superior to those for other sectors; and (3) manufacturing has locational mobility that many other sectors lack.[2/] Tourism, recreation and small crafts industries may offer potential for Athens. However, additional research is needed before either the feasibility or the impacts of these industries can be determined.

Twenty of the sixty recommended industries were eliminated because too few of the critical labor or raw material resources were available in the county.[3/] For the remaining 40 firms, estimates were made of the additional local employment and income if the firm located in the city of Athens. Estimates were also made on the changes in revenues and expenditures for county government. The changes in budgets of the city and school district were examined for three firms in each size category.

Recommendations for future economic development programs in Athens County are presented below. Highlights of the research findings related to each recommendation are also reported.

Additional information on the research findings are in Sections II through V of the full report.

1. Recommendation: Diversification of Economy

> Local government, service organizations, and Ohio University should work closely with development groups, such as the Athens Area Chamber of Commerce and the Athens Industrial Development Commission, to diversify the Athens economy.

2/ Lonsdale, p. 10.
3/ See Appendix A.

Research Summary and Rationale:

Employment in Athens County is heavily concentrated in governmentally-supported institutions. Ohio University and other governmental institutions employ over one-third of the workers covered by unemployment compensations. This level of concentration is over three times the state average.4/

Higher education enrollments in the U.S. are projected to fall by 5 to 15 percent during the next two decades. Ohio's expected high education enrollment trend during the 1990's is much worse than the national average. Likewise, neighboring states face steep declines. Enrollment projections for Ohio University are difficult to make and should be used cautiously. Declines are probable due to the demographic trends and the potential increases in tuition.

Manufacturing employment declined by 17 percent from 1970 to 1978, although slight gains have been made since 1975. In contrast to the Athens experience, manufacturing in neighboring Southeast Ohio counties grew by 50 percent from 1970 to 1978. Diversification of the economic base by adding manufacturing will be difficult due to locational factors and a nationwide decline in growth in this sector. Tax abatements, industrial parks, or subsidized water and sewer lines may be necessary to attract new industry.

Several steps have already been taken by city and county government, Ohio University, the League of Women Voters, Chamber of Commerce, and Athens Industrial Development Commission to study, plan, and implement growth policies. In order to avoid a decline in the local economy

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4/ Sources of data and references are cited in the more detailed discussion in Section II through V.

over the next two decades, these groups will need to cooperate closely.

2. Recommendation: Beneficial Manufacturing

> Programs to attract manufacturing industries should focus on those industries with the most positive impacts on the community and local governments.

Research Summary and Rationale:

The characteristics of the typical firm in the industries recommended by the Jennings report vary considerably, ranging from 12 to 589 employees. The impacts on county government budgets were positive for all forty industries; that is, these industries would contribute more to county government revenues than required in additional expenditures, ranging from a net annual gain of less than $1000 to over $67,000. The average net annual budgetary gain for county government for the firms employing 50 or fewer employees, 51-100 employees, and over 100 employees was $2170, $6300, and $38,300, respectively. The budgetary impacts on county government do not vary directly with the firm's employment level; a biological products firm would contribute $2000 more per year than a surgical instrument firm, although the latter would have 23 more employees than the former.

The "best" three industries in each size category were selected on the basis of their impacts on wage incomes, their impacts on county government, and their projected national growth rates. The manufacturing industries identified as "best" in each category were the following:

Small Industry (1-50 employees)	Medium Industry (51-100 employees)	Large Industries (Over 100 employees)
Transportation Equipment	Orthopedic Appliances	Mining Equipment
Dental Equipment	Surgical Instruments	Oil Field Machinery
Machine Tool	Fabricated Metal Works	Construction Equipment

The net gains to school districts are not as large as might be expected from considering only new property tax revenues. The current school aid formula results in a reduction in state aid as the local tax revenue per student increases. While state aid actually received will not be less after development than before, it frequently is less than the amount that would have been received without growth in the local tax base.

3. Recommendation: Tax Abatements

> Tax abatements through the Area Reinvestment Program should be used more frequently by the city and county as an inducement for attracting new industry. Existing industry should also be given tax abatements for expansion of their local operations.

Research Summary and Rationale:

Attracting new manufacturing firms will be difficult due to Athens's location and declining growth rates in this economic sector. Tax abatements, although unlikely to be a major factor in most industrial location decisions, appear to influence regional and local decisions. In addition, tax abatements signal a cooperative and interested community attitude toward new industry.

The Area Reinvestment Program provides a flexible means of granting tax abatements. Either the city or the county makes the key decisions with no administrative involvement from the state. In the four industries studied, the budgetary impact was positive for all three units of local government. That is, even after reductions were made in tax revenues from real property, the additional tax revenues from other sources exceeded the estimated additional expenses.

If no tax abatements were offered to these firms, the net revenues for the city and county would increase by an average of 4 and 20 percent,

respectively. The larger gain for the county reflects its heavy reliance on property taxes. The school district would have an average decline of 7 percent in net revenues if no tax abatement were offered. This unexpected outcome is a consequence of the equal yield formula for distributing state aid to education.

Net Revenue Gains by Industry
in Year 1 with 10-Year Tax Abatement, Athens*

Manufacturing Industry	Athens City	Athens County	Athens City School
	--(thousands of dollars)-		
Transportation Equip. (SIC 3799)	8.9	2.7	6.1
Dental Equipment (SIC 3843)	5.0	2.1	5.2
Surgical Instruments (SIC 3841)	26.1	4.5	12.0
Fabricated Platework (SIC 3443)	25.0	5.8	13.3

*Net revenues equal additional revenues to local government as a result of the firm locating in the city minus additional costs to each unit of local government.

The impacts of tax abatement under the Impacted Cities Program were not studied. These results only apply to the Community Reinvestment Area Tax Exemption Law.

Area re-investment zones can be established within a 3 to 4 week period. Prior to setting up this zone and granting a tax abatement, a fiscal impact analysis should be conducted to determine if the impacts will be positive.

4. Recommendation: Capital Expenditures

Capital expenditures for the extension of water and sewer lines and publicly owned industrial parks should be seriously considered.

Research Summary and Rationale:

None of the Athens sites over 20 acres currently has adequate sewer and water service to be classified as a maximum service level industrial park. Development professionals report that developed industrial sites are increasingly necessary to attract new industry.

While industrial parks may increase the chance of attracting new firms, these parks may or may not be a good investment. The return on this investment depends not only on the costs of developing the park but also on the speed of attracting occupants. Caution should be used in estimating the income from a park, since no objective procedures exist to determine how quickly new industry can be attracted.

Uncertainty about the nature of the industry and about the timing of occupancy could be reduced by anticipating the needs of local industry. Once the nature of the industry is known, the level of capital investment justified by local government can be determined.

For example, the city could spend up to $38,300 in capital improvements as an inducement to attract a dental equipment manufacturer, assuming a discount rate of 6 percent. The county could invest up to $18,400 on inducements for a total of $56,700. Tax rates would not need to be increased to cover these capital expenditures if interest rates for the city and county were at 6 percent. At 10 and 14 percent, the city and county could spend $47,300 and $40,100, respectively.

5. Recommendation: Business Community and OU Faculty

> Two new local programs should be initiated to strengthen the ties between the Athens business community and Ohio University faculty. Greater awareness of several existing programs from small business is also needed.

Research Summary and Rationale:

Most growth in employment has come from the expansion of existing

local industry rather than from the attraction of outside industry. Retention and expansion programs can include (1) local government ombudsmen, (2) business management assistance, (3) labor management committees, (4) tax abatements, and (5) industrial park site improvements.

Elements of the first three approaches have already been initiated by the Athens Area Chamber of Commerce, the Athens Industrial Development Committee, and the Athens Labor-Management Committee.

Stronger links between the business community and OU faculty could benefit both groups. A discussion of these benefits is provided in the paper by Dr. Albert Shapero, Professor of American Free Enterprise System, The Ohio State University. (Reference number 10).

The two new programs suggested are the following: An Athens Economic Development Forum and A Circuit Rider Business Consultant Program. Existing programs for small business are available through the Small Business Administration, Cooperative Extension Service, and the Ohio Technology Transfer Organization. Details are provided in Section V of the full report.

6. Recommendation: Research on Tourism

Additional research should be done on the economic feasibility of expanding the recreation and tourism industry in Athens.

Research Summary and Rationale:

The natural beauty of the Athens area gives it potential for expanding the tourism industry. The economic feasibility of specific projects depends on the volume of tourists, the amount tourists are willing and able to pay for participating, and the costs of production. As gasoline prices increase, Athens's ability to attract tourism may increase or decrease. The interaction of several tourist attractions may improve volume. It is currently unclear how many new jobs could be

created from these recreational industries, and what the average income might be. This topic merits additional research.

Economic geographers and regional economists should be asked to explore these issues. Assistance in initiating these case studies is available through the GROW Project.

II. THE ECONOMIC OUTLOOK FOR ATHENS COUNTY

Introduction

This section briefly reviews Athens's economic characteristics: income per person, unemployment, employment by economic sector. Since Ohio University is the major employer in Athens, its employment outlook is discussed in more detail. Questions are raised about the outlook for growth in tourism and the crafts industry.

Income Per Person and Unemployment

In 1978 personal income per person in Athens County was $5,314, which was 68 percent of the Ohio and national averages.5/ In 1970 the proportion of persons in poverty in Athens County was 1.7 times the state average.6/ Poverty levels in Appalachian Ohio fell from 16 percent in 1970 to 13.5 percent in 1976.7/ However, no recent data are available on the county level.

Unemployment rates in Athens County for 1979 averaged 5.4 percent or 1,975persons.8/ This official rate only considers those persons who actively seek employment. In rural areas, unemployed persons may become discouraged about the possibilities of finding a job and stop searching even if they are willing and able to work. If these "discouraged workers" had been included in the estimates of unemployed, the unemployed rate in 1979 would have been somewhat higher.

5/ U.S. Department of Commerce Bureau of Economic Analysis, Survey of Current Business, Washington, D.C., April 1980.

6/ U.S. Bureau of the Census, County and City Data Book, 1977.

7/ Pickard, Jerome P., "Counting Noses in Region and Nation: A Projection," Appalachia, Appalachian Regional Commission, Vol. 13, No. 4, March-April 1980.

8/ Ohio Bureau of Employment Services, Table RS 219.79.

In March of 1980, over 2131 persons sought jobs through the Athens, Ohio Bureau of Employment Services. Table 1 provides a listing of the number of persons by occupational category and sex. While the average number of unemployed was less than this, Table 1 suggests that a fairly large labor pool exists for future economic growth.

Employment by Economic Sector

Employment in Athens County is heavily concentrated in governmentally supported institutions: Ohio University, Athens Mental Health Center, Hocking Technical College, and local government. These institutions represent 38 percent of the employment covered by unemployment compensation within the county compared to 12 percent statewide.9/ Manufacturing employment is only 10.7 percent of the total compared to 33 percent statewide and 24 percent in the GROW Region -- Athens, Gallia, Jackson, Meigs, Pike, Vinton (see Table 2).

Table 3 shows the level of employment in Athens County in 1978, the percent changes from 1973 to 1978 in the county, and the projected percentage changes nationally from 1980 to 1985 and also from 1985 to 1990. Four sectors in Athens County lost employment from 1973 to 1978: mining; transportation and utilities; finance, insurance, and real estate; and state and federal government. Services, wholesale and retail trade, and manufacturing sectors grew during this period, giving a net change of less than one percent.

9/ Ohio Bureau of Employment Services, "Covered Employment and Payrolls," (RS 203 series). Approximately 80% of all employment is covered employment.

Table 1: Persons Seeking Jobs by Occupation, Athens County, 1979*

Occupation	Men	Women	Total
Professional, Managerial	136	91	227
Clerical and Sales	118	322	440
Service	154	278	432
Farming and Related	58	11	69
Processing	33	9	42
Machine Trades	137	19	156
Bench Work	70	58	128
Structural Work	291	4	295
Miscellaneous	317	25	342
Total	1314	817	2131

*Persons seeking jobs through the Ohio Bureau of Employment Services, Athens County, 1979.

Source: Ohio Bureau of Employment Services, RS 268.2-A (4-7-80).

Table 2: Covered Employment by Economic Sector - 1978

	Athens County	GROW Region	Ohio
Agriculture	0.3	0.5	0.4
Mining	0.3	5.7	0.7
Construction	2.7	3.8	4.3
Manufacturing	10.7	23.9	33.4
Transportation & Utilities	7.1	7.1	4.7
Wholesale & Retail Trade	23.5	18.2	23.1
Finance, Insurance, & Real Estate	3.5	3.0	4.5
Services	13.4	11.8	16.5
State & Local Government	38.4	26.0	12.4
Total	100.0	100.0	100.0

Source: Ohio Bureau of Employment Services, 1979.

Table 3: Employment Change in Athens County and the United States, 1973-1978

Industry	Athens County[1]		United States[2]	
	Covered Employment, 1978	Employment Percent Change 1973-1978	Projected Employment Percent Change 1980-1985	1985-1990
Mining	42	-22.2	5.3	1.6
Construction	361	0.3	9.2	3.5
Manufacturing	1422	4.2	7.1	3.8
Transportation and Utilities	944	-15.2	5.8	2.6
Wholesale and Retail Trade	3115	13.6	10.9	5.6
Finance, Insurance, & Real Estate	468	-12.0	15.1	9.5
Services	1770	18.4	18.1	14.0
State & Federal Government	3238	-11.1	6.3	3.8
Total*	11,360	0.5	9.9	6.0

Sources: [1]Ohio Bureau of Employment Services, 1974 and 1979.

[2]U.S. Department of Labor, Bureau of Labor Statistics, 1979 and 1980.

*This is the total of the above categories, not of total employment. Some employment not included is any job not covered by unemployment insurance, agricultural workers, and approximately 2000 local government workers.

While the local firms and institutions may grow or decline at different rates than nationally, this table shows the national pressures that each sector faces. Obviously, firms everywhere hope to do better than average. Nationally, services are expected to expand most rapidly, followed by the finance, insurance, and real estate sector and then wholesale trade. Generally, these sectors depend upon the population base and income levels, so it is doubtful that local growth will be as rapid as the national trends suggest. From 1973 to 1978, national growth in these three sectors was considerably higher than that occurring in the county.

Manufacturing

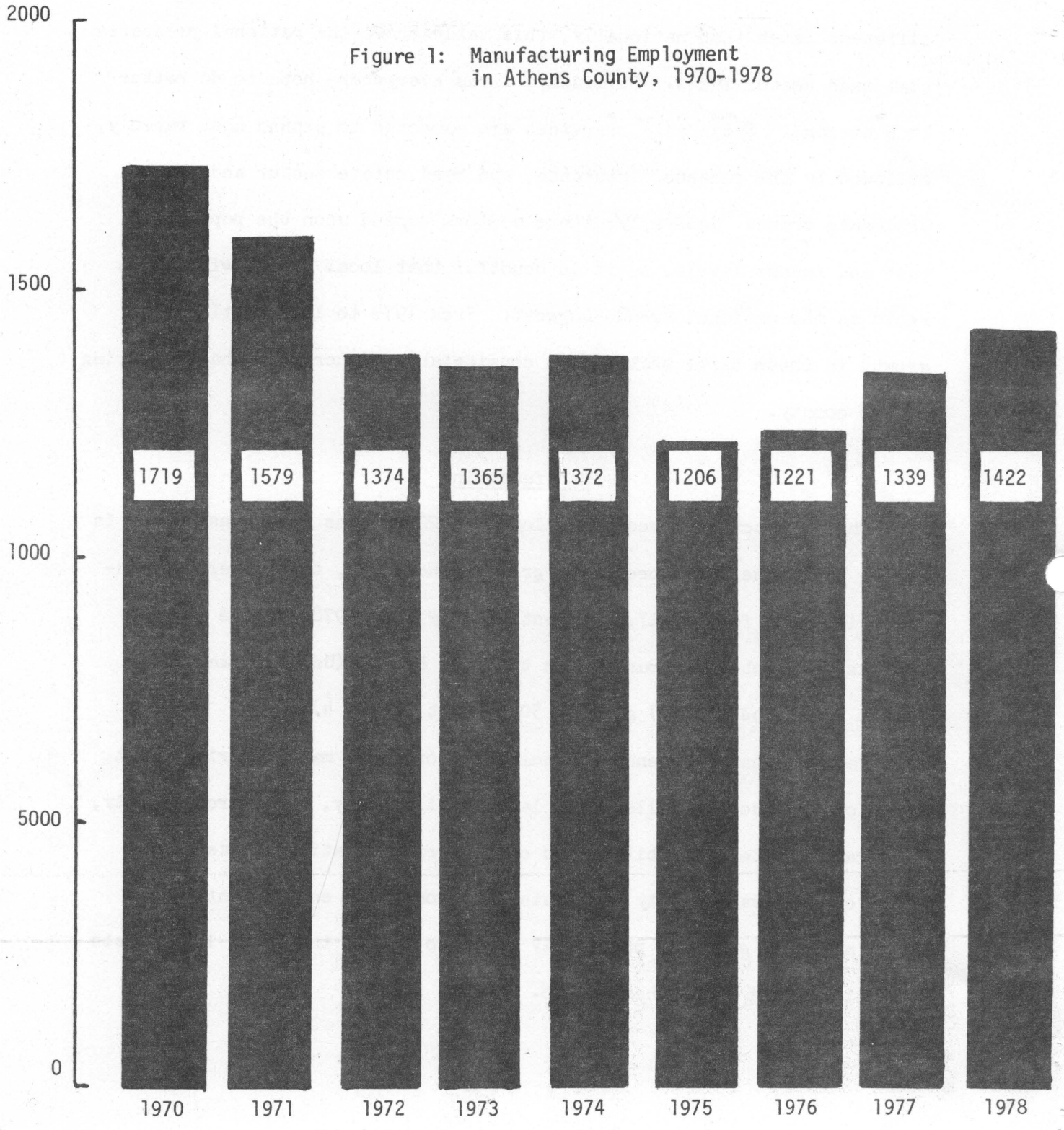
The manufacturing sector employed 1,422 persons in Athens County in 1978. While there has been some growth since 1973, the number of manufacturing jobs fell by 17.3 percent from 1970 to 1978 (Figure 1). In contrast, neighboring counties in the GROW Region (Gallia, Jackson, Meigs, Pike, and Vinton) grew by 50 percent (Table 4).

Factors that influence the selection of a new manufacturing plant location include the following: labor availability, labor productivity, wage rates, site availability and costs, transportation, market location, energy availability and costs, and community environment.10/

Increased gasoline prices may begin to offset the lower labor costs typically found in Southeast Ohio.

10/ For further discussion of location factors, see reference #3.

Figure 1: Manufacturing Employment in Athens County, 1970-1978



Source: Ohio Bureau of Employment Services, 1970 through 1979.

Table 4: Manufacturing Employment by County, 1970 to 1978

	1970	1978	Percent Change 1970-78
Athens	1,719	1,422	- 17.3
Gallia	437	1,179	169.8
Jackson	2,060	2,708	31.5
Meigs	401	431	7.5
Pike	1,791	3,876	116.4
Vinton	495	741	49.7
GROW Region	6,903	10,357	50.0
Ohio	1,403,801	1,378,567	- 1.8

Source: Ohio Bureau of Employment Services, Division of Research and Statistics, "Covered Employment and Payrolls" (RS 203 series), Columbus, Ohio, 1971 and 1979.

Ohio University's Employment Outlook

Employment at Ohio University is likely to decline over the nest two decades due to enrollment declines. Enrollment at universities and colleges is related to the number of people aged 18 to 24. Nationally, this age group will decline by 23.3 percent from 1980 to 1997.[11/] Adjustments in enrollment projections need to be made for the following: (1) greater participation of older persons, women, and blacks, (2) increased retention rates, (3) increased proportion of part-time enrollments, (4) potential further decreases in participation rates of males 18-24. After considering these adjustments, the Carnegie Council on Policy Studies in Higher Education estimates declines in enrollment of 5 to 15 percent by 1997.[12/]

Enrollment is also likely to fall as tuition fees increase. If a tax limitation movement, similar to "Proposition 13", occurs in Ohio, this movement could reduce state subsidies and increase tuition costs. The Carnegie Council did not explicitly include this factor, so the Council's estimated declines are probably conservative.

The Carnegie Council on Policy Studies in Higher Education predicts that the decline will come in an uneven pace. Through the 1982-83 academic year, the Council expects enrollments to remain fairly even and possibly to rise some. Then the Council predicts a decline from Fall 1983 through 1988. This decline may be followed by a rise in 1989 and 1990, with another decline from 1991 through 1997.[13/]

11/ Three Thousand Futures, p. 39.
12/ Ibid., p. 39.
13/ Ibid., p. 45.

The Carnegie Council is optimistic that federal policy will change by the mid 1990's, leading to increases in college enrollments after 1977.

States and regions will experience quite different changes in higher education enrollments. As Figure 2 shows, Ohio's enrollment trend is much worse than average. Neighboring states also are expected to experience either much worse than average declines, worse than average declines, or average declines.

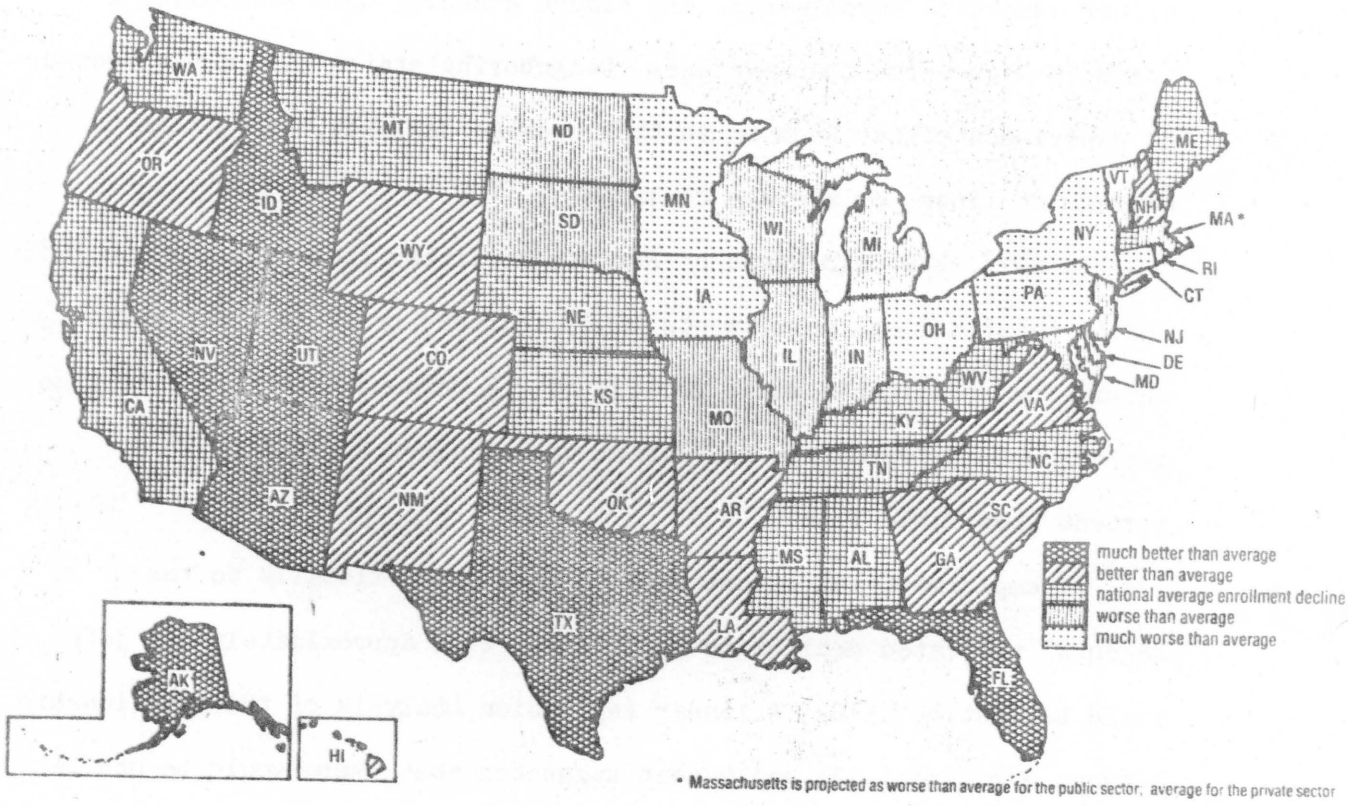
In 1978, the Ohio Board of Regents predicted that from 1979 to 1982 Ohio's total college enrollments would increase by 30 percent, while university enrollments would decline by 2.4 percent. For the same time period, Ohio University's enrollment was expected to fall by 10.8 percent (see Table 5).[14/]

If employment and income were to fall proportionally to the Regents' projected decline in enrollment, then approximately 200 jobs would be lost by 1982. A linear regression analysis of the relationship between enrollment and employment suggested that there would be one less employee for each 4 to 5 fewer students. This implies a reduction of between 237 and 316 jobs if there is a 10 percent loss in enrollment.[15/] Caution must be used with these estimates. First, the enrollment estimates come from an unpublished Board of Regents study. Second, the relationship between employment and enrollment might change in the future. However, even if 1/4 to 1/2 this decline occurs, this reduction in employment would have a significant impact on the Athens economy.

14/ Linda R. Gildow, Ohio Board of Regents, January 2, 1979: personal communication.

15/ See Appendix E for the regression analysis.

Figure 2: Projected Enrollment Trends in the 1990s
Relative to the National Average



Source: Carnegie Council estimates.
Reported in Three Thousand Cities, p. 71.

Table 5:

Enrollment Projections for Ohio's
Higher Education Institutions

	1979	1980	1981	1982
All State Schools				
Enrollments	369,159	374,640	375,828	380,319
Percent Change Since 1979	---	1.5	1.8	3.0
Universities				
Enrollment	237,893	237,411	233,761	232,258
Percent Change Since 1979	---	-0.2	-1.7	-2.4
Others[1]				
Enrollment	131,266	137,229	142,067	148,061
Percent Change Since 1979	---	4.5	8.2	12.8
Ohio University				
Enrollment	13,194	12,855	12,195	11,773
Percent Change Since 1979	---	-2.6	-7.6	-10.8
Hocking Technical College				
Enrollment	2,239	2,369	2,485	2,556
Percent Change Since 1979	---	5.8	10.1	14.2

Source: Ohio Board of Regents, 1978.

1/ Includes community colleges, technical colleges, and branch campuses.

Craft Industries and Tourism

Recently, a number of small arts and crafts industries have developed in Athens County. It appears that these small craft industries offer some potential for expansion. However, little data are currently available on the extent of this type of employment, the average income, or the potential for future expansion. Important questions remain unanswered about the size and stability of market for arts and crafts.

Tourism may also offer some potential for generating additional income and employment. The potential for tourism remains very uncertain. Some of the questions that need additional research are the following: (1) As energy prices increase, will this fact enhance or detract from tourism potential in Athens County? (2) How much are tourists willing and able to pay for tourism activities? (3) What is the minimum level of demand required to sustain each type of tourist enterprise? (4) How long will new tourist attractions take to establish the minimum level of traffic? (5) What will be the impact of these activities on local government revenues and expenditures?

Summary on Athens' Economy

The Athens economy is highly concentrated in a small number of employers. Demographic trends will put pressures on Athens' largest employer: Ohio University. It appears that the major pressure on university employment will occur starting in 1983 when enrollments are projected to fall most rapidly.

Diversification of the city and county's economic base would make them less dependent on publicly supported institutions. This diversification could protect the local economy from demographic shifts and changes in state and federal aid to education.

Manufacturing is currently being explored as a potential growth sector in the county. Local growth in this sector will be difficult. Nationally, the projected growth in manufacturing is relatively low. Increased energy costs may discourage the decentralization of industry that occurred in the 1970's. If growth is to occur in manufacturing, inducements, such as tax abatements or subsidized extension of water and sewer lines, may be needed.

Section III reports the impacts on local government of attracting firms in the manufacturing industries suggested by James Jennings Associates. Section IV describes local policies that could be used to induce these industries to locate in Athens.

III. ECONOMIC IMPACTS OF MANUFACTURING INDUSTRIES

The county's additional private income and the county government's net revenue are reported for the typical firm in each of 40 industries. Then the "best" three industries in three different employment sizes are studied for Athens City and Athens City School District.

A screening process eliminated 20 of the 60 industries recommended by Jennings Associates. This process is described in Appendix A. The key assumptions and the data used in deriving the estimated impacts are described in Appendix B.

Characteristics of the Typical Firm

Table 6 shows four characteristics of a firm with average employment in each industry. Ten firms employ fewer than 50 persons, ten firms hire from 54 to 87 workers, and twenty firms hire over 100 employees. Annual earnings per worker reflect national data adjusted for the lower wage rates in Athens County. The annual earnings vary from slightly over $10,000 to over $20,000.

The projected growth rates for employment in each industry range from 2 percent to over 50 percent, averaging 11.5 percent. These employment projections are derived from industry output trends. However, the projected changes in labor productivity and the average weekly hours result in differences in the employment trends.[16/]

County Level Impacts

Table 7 reports the impacts of the typical firm in 40 industries on the following: (1) additional employment income at the county level,

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16/ Personick, p. 26.

Table 6: Characteristics of Typical Firms in Various Manufacturing Industries

Industry	Employment[1] Per Firm	Projected[2] Employment Growth Rate 1980-1985	Annual[1] Earnings Per Worker	Market Value[1] of Firm's Property (millions of $)
A. 1-50 Employees				
Typesetting 2791	12	2%	$14,043	.1
Die Tools 3544	17	12	17,245	.4
Electroplating 3471	19	9	10,266	.3
Commercial Printing 2752	23	2	15,396	.5
Transportation Equipment 3799	34	53	10,860	1.0
Dental Equipment 3843	34	19	13,005	.9
Metal Stampings 3469	40	6	12,864	1.0
Machine Tool Accessories 3545	42	12	14,493	1.1
Plastics Products 3079	47	8	11,301	1.5
Ophthalmic Goods 3851	49	3	10,595	1.0
B. 51-100 Employees				
Aluminum Foundries 3361	54	9	14,555	1.2
Optical Instruments 3832	57	4	13,519	1.4
Orthopedic Appliances 3842	58	19	11,264	1.5
Biological Products 2831	60	11	13,402	2.8
Business Forms 2761	62	2	14,280	2.1
Industrial Machinery 3559	63	8	15,956	2.1
Surgical Instruments 3841	73	19	11,510	2.0
Fabricated Metal Works 3443	77	16	15,560	2.7
Farm Machinery 3523	77	7	16,428	3.0
Building Paper Mills 2661	87	5	15,156	4.9
C. Over 100 Employees				
Mining Machinery 3532	112	20	15,453	4.6
Frozen Specialties 2038	120	6	10,991	3.9
X-Ray Apparatus 3693	126	7	13,821	3.8
Tufted Rugs 2272	127	17	10,253	5.0
Plastics Materials 2821	128	7	18,081	18.8
Gray Iron Foundries 3321	147	8	17,622	5.5
Oil Field Machinery 3533	155	20	16,695	7.7
Photographic Equipment 3861	175	13	17,593	10.4
Frozen Fruits 2037	180	6	10,206	8.1
Air Conditioning Equipment 3585	181	15	14,950	6.4
Construction Equipment 3531	198	20	18,193	10.6
C.R.T. Picture Tubes 3672	207	17	13,408	7.9
Resistors 3676	217	17	10,846	4.3
Motors and Generators 3621	219	11	12,865	5.8
Industrial Organic Chemicals 2869	223	7	20,271	45.8
Malable Iron Foundries 3322	251	8	17,086	7.0
Paperboard Mills 2631	254	9	19,854	36.3
Ball Bearings 3562	342	11	17,280	16.1
Paper Mills 2621	359	5	19,383	40.8
Glass Containers 3221	589	8	15,809	23.0

Source: [1]1976 Annual Survey of Manufactures, U. S. Census Bureau

[2]Employment Projections for the 1980's, U. S. Bureau of Labor Statistics

Table 7: Impacts on Local Income and the County Budget of Typical Firm By Industry

Industry	Additional Local Income, Year One	Impact on County Government, Year One	Present Value of Impact on County Government
	(thousands of dollars)		
A. 1-50 Employees			
Typesetting 2791	58	*	4
Die Tools 3544	98	1	9
Electroplating 3471	67	1	6
Commercial Printing 2752	107	1	11
Transportation Equipment 3799	116	3	19
Dental Equipment 3843	129	2	19
Metal Stampings 3469	167	3	21
Machine Tool Accessories 3545	181	3	23
Plastic Products 3079	170	4	28
Ophthalmic Goods 3851	160	3	20
B. 51-100 Employees			
Aluminum Foundries 3361	268	3	26
Optical Instruments 3832	178	3	28
Orthopedic Appliances 3842	184	4	28
Biological Products 2831	186	7	50
Business Forms 2761	278	6	41
Industrial Machinery 3559	255	6	42
Surgical Instruments 3841	222	5	38
Fabricated Metal Works 3443	356	7	51
Farm Machinery 3523	383	8	58
Building Paper Mills 2661	450	14	86
C. Over 100 Employees			
Mining Machinery 3532	476	13	86
Frozen Specialties 2038	443	11	70
X-Ray Apparatus 3693	393	9	73
Tufted Rugs 2272	423	14	89
Plastics Materials 2821	611	52	314
Gray Iron Foundries 3321	884	16	110
Oil Field Machinery 3533	698	21	144
Photographic Equipment 3861	695	28	187
Frozen Fruits 2037	657	23	141
Air Conditioning Equipment 3585	819	18	122
Construction Equipment 3531	1050	30	196
C.R.T. Picture Tubes 3672	916	22	147
Resistors 3676	686	11	86
Motors and Generators 3621	899	16	116
Industrial Organic Chemicals 2869	1145	128	761
Malable Iron Foundries 3322	1393	21	153
Paperboard Mills 2631	1610	104	621
Ball Bearings 3562	1983	46	309
Paper Mills 2621	2221	116	703
Glass Containers 3221	3382	67	442

Source: GROW Community Development Project; 3/4/80

*Less than $1000.

(2) the net revenue for county government in year one and (3) the present value of the impact on county government.

The additional income includes not only residents of the city of Athens, but also the rest of the county. Increases for local merchants and service sector are not shown in Table 6.

Additional Employment Income

Since one of the primary objectives of economic development is to help local people find jobs or raise their incomes, the estimates of additional income deduct payroll going to in-migrants and to commuters from outside the county. Likewise, if a worker has been previously employed or has been receiving some form of welfare, it is best to count only the increase in his/her income.

After inclusion of these forms of income leakages, it is clear that the additional local income in the county will be much lower than the plant payroll. For example, for a firm manufacturing dental equipment (SIC 3843) and employing 34 persons, the additional income to local residents was $99,046 per year. This is only 22 percent of the payroll. Nearly half of the total goes to in-migrant workers, and 13.5 percent goes to commuters from neighboring counties. Vacated jobs leakage accounts for an additional 16 percent of the total payroll. This leakage is the loss of income to the community when a currently employed local worker takes a job at a new plant and his previous job is left vacant. Previous research in Southeast Ohio has found that 30 percent of the local workers' payroll was lost in this fashion.[17/]

17/ Morse and Gerard, p. 40.

The increase in local incomes depends on four basic factors: (1) the number of workers, (2) the annual earnings per worker, (3) the percentage of in-migrants working at the firm, and (4) the percent of previous local jobs left vacant. In this study, the last factor is assumed to be the same for all firms (30 percent) and will not influence the ranking. Table 7 clearly illustrates that size alone will not determine the net impact. For example, an aluminum foundry firm with only 54 employees contributes over $48,000 more per year to the county's economy than does a surgical instruments manufacturer with 73 employees.

Net Revenue - County Government

Table 8 shows the local government revenue and expenditure items estimated for a dental equipment and supply manufacturer. The county's additional revenue, as a result of this plant, is estimated to be $3558. The expenditures for the county's general fund are estimated to increase by $1100. The net gain for the county is $2458. This net value, rounded off to $2000, is also shown in column 2 of Table 7.

No capital expenditures are included for county government expenditures. In Section IV, the maximum capital expenditure that the county and city can make (without needing to raise tax rates) is reported. The additional expenditures for new residents assumes that there are 2.5 persons in addition to the in-migrant worker.

The county's general fund expenditures per person are used to estimate additional service costs. This common estimation procedure may either overestimate or underestimate additional expenditures. Several more sophisticated estimation procedures can be used if more accurate

Table 8: Detailed Estimates for a Dental Equipment Manufacturing Firm, Year 1

BENEFITS, COSTS AND NET GAINS FROM NEW JOBS

IN COMMUNITY OF ATHENS
IN A DENTAL EQUIP FIRM
EMPLOYING 34 ADDITIONAL WORKERS

PRIVATE SECTOR BENEFITS	YEAR 1
NEW INCOME, EMPLOYEES IN CITY	99046.
NEW INCOME, EMPLOYEES IN COUNTY	29891.
NEW INCOME, SERVICE SECTOR	26305.
CITY GOVERNMENT	
ADDITIONAL REVENUES	
PROPERTY TAXES, NEW PLANT	155.
PROPERTY TAXES, NEW HOMES	163.
PROPERTY TAXES, ADDITIONAL TANGIBLE	781.
INCOME TAX	5187.
STATE AID	404.
MISC TAXES, NEW RESIDENTS	198.
TOTAL	6888.
ADDITIONAL EXPENDITURES	
POLICE	413.
FIRE	366.
WATER	419.
SEWER	270.
STREETS	128.
OTHER	119.
CAPITAL EXPENSES	0.
TOTAL	1715.
NET REVENUES	5173.
COUNTY GOVERNMENT	
ADDITIONAL REVENUES	
PROPERTY TAXES, NEW PLANT	356.
PROPERTY TAXES, NEW HOMES	601.
PROPERTY TAXES, ADDITIONAL TANGIBLE	2133.
SALES TAX	0.
STATE AID	352.
MISC TAXES, NEW RESIDENTS	116.
TOTAL	3558.
ADDITIONAL EXPENDITURES	
CAPITAL EXPENSES	0.
SERVICES, NEW RESIDENTS	1100.
TOTAL	1100.
NET REVENUES	2458.
SCHOOL DISTRICT	
ADDITIONAL REVENUES	
PROPERTY TAXES, NEW PLANT	1928.
PROPERTY TAXES, NEW HOMES	3261.
PROPERTY TAXES, ADDITIONAL TANGIBLE	11113.
STATE AID	-5812.
MISC REVENUES	368.
TOTAL	10858.
ADDITIONAL EXPENDITURES	
OPERATING EXPENSES, NEW STUDENTS	6085.
CAPITAL EXPENSES	0.
TOTAL	6085.
NET REVENUES	4773.

Source: Computer printout from Ohio Economic Impact Model.

estimates are needed.[18]

There is considerable room for variation in the expenditure estimate. Table 9 presents the breakeven county expenditure per person for four of the small industries. The breakeven county expenditure per person is defined as the level at which additional revenues to the county due to the new plant would equal the total additional expenditures to the county. If county expenditures per person exceeded the breakeven level, the total additional revenues would be less than the total additional expenditures, requiring a tax rate increase. These results show that for the transportation equipment manufacturing firm, the county expenditures from the general fund could be as high as $189 per person or 6.5 times the $29 currently spent. If the expenditures were higher than $189 per person, this industry would have a negative impact and would lead to higher taxes.

City and School District Impacts

Impacts at the city and school district level were estimated for nine firms, the "best" three in each employment size. Increases in income to local residents are shown for different residential locations. The city and school net revenues are also shown under several situations.

Additional Employment Income

In Table 10 the increases are shown in income to workers residing in the city of Athens, to employees from the rest of the county, and to those working in the service sector.

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[18] Morse and Gerard, 1979. If inducements were being offered to a particular firm, it would be necessary to use these more accurate, and more costly, estimation procedures for expenditures.

Table 9: Breakeven County Expenditure Per Person, Athens County

Industry	Breakeven County Expenditure Per Person	Ratio to Current Expenditure Per Person
Transportation Equipment: 3799	$189*	6.5
Dental Equipment & Supplies: 3843	$109	3.8
Surgical & Medical Instruments: 3841	$117	4.2
Fabricated Platework (Boiler Shops): 3443	$132	4.7

Table 10: Additional Employment Income by Residential Location and Industry, Athens, 1980

Industry		Average Employment	Additional Income to: Employees from City of Athens	Employees from Rest of Athens County	Service Sector Athens City
			------thousands of dollars------		
3799:	Transportation Equipment	34	89	27	19
3843:	Dental Equipment & Supplies	34	99	30	26
3545:	Machine Tool Accessories	42	140	41	28
3842:	Surgical & Medical Appliances	58	143	40	35
3841:	Surgical & Medical Instruments	73	169	53	50
3443:	Fabricated Platework (Boiler Shops)	77	275	81	54
3532:	Mining Machinery & Equipment	112	368	108	79
3533:	Oil Field Machinery & Equipment	155	536	162	121
3531:	Construction Machinery	198	807	243	157

Payroll going to in-migrant workers is not shown in columns 2 and 3. It does enter the estimates of local spending for goods and services shown in column 4 of Table 10. The estimates in column 4 assume that city and county residents spend 40 and 30 percent, respectively, of their new incomes in the city. The results shown are the net income to the service sector rather than total sales. It is not correct to add all three columns since additional income in columns two and three is transferred to column 4.

The estimates in Table 10 assume that 56 percent of the workers live in the city of Athens, 18 percent live in the rest of the county, and 26 percent commute from surrounding counties.19/

Net Revenues - City and School

Table 8 lists $6888 for the first year's additional revenues to the city as a direct and indirect result of a dental equipment manufacturer. The additional expenditures are $1715, leaving a net revenue of $5173. This net revenue is also shown in Table 11, rounded to the nearest thousand dollars.

The school district's additional revenues are $10,858. The additional property tax revenues are partially offset by the loss of $5812, which would have been received if the plant, including the new students, had not located in the district.20/ The new students are estimated to add $6085 to the operating costs. These changes leave a net gain in the first year of $4773, which was rounded off to $5000 in Table 11.

19/ See Appendix B for the procedure used to derive these estimates.
20/ The school aid formula is explained in Morse and Gerard - 1979.

Table 11: Net Revenues to Local Governments by Industry for First Year, Athens County, 1980

Manufacturing Industry	County Government	City Government	School District
	----thousands of dollars----		
1-50 Employees			
Transportation Equip. (3799)	3	9	5
Dental Equipment (3843)	2	5	5
Machine Tool (3545)	3	14	6
51-100 Employees			
Orthopedic Appliances (3842)	4	19	12
Surgical Instruments (3841)	5	27	11
Fabricated Metal Works (3443)	7	26	12
Over 100 Employees			
Mining Machinery (3532)	13	40	21
Oil Field Machinery (3533)	21	61	33
Construction Equipment (3531)	30	76	41

While the impacts on the city and the school appear to increase as the firm size increases, there may not be a direct relationship. Notice that the county impacts do not increase consistently.

Alternative Assumptions on Residential Location

The effects of alternative assumptions on the willingness to commute are shown in Table 12. The percentage of workers in the city of Athens is 71, 56, and 33 percent for a low, intermediate, and high willingness to commute, respectively.

Although the additional income going to city residents varies considerably, the changes are much smaller for the rest of the county and service sectors. There are minor differences, all being less than $1000 per year, to local governments. Three major reasons exist for the lack of impact on local government. First, because the number of in-migrants to each unit remains the same, the additional expenditures to local governments are the same. Second, because the majority of property tax revenues comes from the new plant and not from homes, the residential location does not affect this revenue. Third, because each firm is assumed to locate in the city of Athens, municipal income taxes are collected from all workers regardless of their residential locations.

Table 12: Effect of Worker's Willingness to Commute Upon Income & Local Government: Dental Equipment and Supplies Manufacturer

Willingness to Commute	Additional Income: City Residents	Additional Income: Rest of County	Additional Income: Service Sector	Local Government: County	Local Government: City	Local Government: Schools
	(thousands of dollars)					
Low	119	23	27	3	12	5
Intermediate	99	30	26	3	12	5
High	54	34	23	3	12	5

IV. CITY AND COUNTY GROWTH INDUCEMENTS

What can local government do to encourage economic development? How effective are these local efforts? What will be the impacts of these programs on local budgets?

Local government can use four major approaches for encouraging economic development: (1) provision of tax abatements, (2) creation of industrial parks, (3) extension of water and sewer services, and (4) improvement of business management skills and information. This section explores the financial impacts on local government of using the first three. Section V discusses the last approach.

Tax Abatements

The Area Reinvestment Program allows cities and counties to develop "community reinvestment areas" in zones where existing structures have historical significance and where the local government feels there has not been adequate investment. The abatement applies only to new real property in the designated area. The length of abatement varies with the type of structure. For example, existing one and two family dwellings can only receive abatements for up to 10 years. New buildings can receive an abatement for up to 15 years (see Table 13). The number and size of "community reinvestment areas" is a local decision. The city, or the county, can have as many, or as few, as it wishes.

If the area reinvestment tax abatement were given to the four firms shown in Table 14, all three local governments will still receive enough additional revenues to cover additional costs. The city's net gain would be reduced by only 4 percent, while the county's net gain would be down by 20 percent.

Table 13: Features of the Area Reinvestment Tax Abatement Program

Type of Structure	Minimum Remodeling	Maximum Period of Tax Abatement (years)
Existing 1 and 2 family dwelling	$2,500	10
Existing dwelling of more than two units and existing commercial and industrial structures	$5,000	12
New dwelling, commercial or industrial structures	NA	15

Source: Digest of State Programs Urging Redevelopment, Ohio Department of Economic and Community Development, March 1978, p. 22.

Table 14: Tax Abatement Impacts for Year 1 for Four Industries

Manufacturing Industry	City		County		School	
	Abatement Given?					
	No	Yes	No	Yes	No	Yes
	(thousands of dollars)					
Transportation Equip. (3799)	9.6	8.9	3.2	2.7	5.6	6.1
Dental Equip. (3843)	5.2	5.0	2.5	2.1	4.8	5.2
Surgical Instruments (3841)	27.6	26.1	5.6	4.5	11.3	12.0
Fabricated Platework (3443)	26.5	25.0	7.2	5.8	12.4	13.3

The city's net gains would fall less than the county's because the city relies primarily on income taxes rather than on property taxes. The income taxes are not abated.

The impacts on the county are still positive because only the real property tax on the plant is abated. Tangible personal property tax and taxes on new homes are not abated.

The school district's net gain would increase rather than decline as might be expected. This occurs because of the current state aid formula for education. The tax exempted property would not be added to the tax base; however, the additional children would be counted. The net effect is to raise state aids by more than the loss in local tax revenues. The average net gain for the schools is 7 percent.

Based on only four firms, we cannot conclude that this tax abatement is always advantageous and will yield positive budgetary impacts. It does show that under some circumstances the abatement yields positive results. New industries should be studied on an individual basis before granting tax abatements.

Industrial Parks

A large number of industrial sites were identified by the Jennings report. None of the sites over 20 acres has adequate sewer and water service to be classified as a maximum service level industrial park. Representatives from the state's Department of Economic and Community Development and utility companies report that industrial parks are essential for attracting new firms. The large number of communities seeking new industry and the small number of firms relocating each year increases the competition between communities.

While an industrial park may increase the chance of attracting a new firm, it may or may not be worth creating. The costs and benefits depend on the investment needed to create the park and on the speed with which it fills up.

Table 15 illustrates the importance of time on industrial park investment decisions. In the first year after investment, the present value of the net gains to the city of a machine tool firm is $116,373. If this firm did not locate until the fifth year, the present value of the benefits (at 9 percent discount) would be only $69,816.

For the county, the maximum investment justified, if the machine tool firm located in the park immediately, is $69,415. This rapidly declines to $25,648 if it takes five years to secure this plant. This suggests that communities should hold investments in industrial parks to a minimum until the probablity of attracting firms is favorable. Practitioners in industrial locations claim, however, that there are increasing pressures to have fully-developed sites. The reduced growth in manufacturing gives firms a competitive advantage in dealing with communities. This suggests the need for developing parks earlier.

Currently, research on the effectiveness of industrial parks is not adequate to determine how rapidly a specific park will develop. Without this information, the benefits and costs of community owned industrial parks cannot be established. A cautious approach may be justified in Athens, given its location and recent manufacturing trends.

An implication of this dilemma is that the community should look more carefully at its existing industry. Identification of local firms that wish to expand within a year, or within several years, may provide a hedge against some of this uncertainty.

Table 15: Maximum Investment by Local Governments in an Industrial Park[a]

Year Firm Locates	City	County	Total City and County
1	$116,373	$69,415	$185,788
5	69,816	25,648	95,464
10	35,087	3,781	38,868
20	3,556	0	3,556

Source: Computed using the Ohio Economic Growth Impact Model (see Morse and Gerard).

[a]The maximum investment is the present value of the net gains to each unit of government over the next 20 years. These results are based on the typical machine tool firm (SIC 3542).

Extension of Water and Sewer Services

Capital expenditures by local government on water and sewer systems and access roads are sometimes used as an inducement for new industry. How much can each unit of local government afford to spend before it gives away more than it receives back? At what point must the city, or county, raise local tax rates in order to support these inducements?

The present value of the annual net revenues shows the current worth of these budgetary surpluses (or deficits) over a period of years at a specific discount rate. For example, a net surplus of $10,000 received 10 years from now has a present value of only $4255, at 10% interest. If the net surplus of $10,000 was received every year for 10 years, the present value is only worth 68 percent of the nominal cash value.

As the discount rate increases the capital expenditure justified as an inducement for a specific firm falls (see Table 16). While 10% is a commonly used discount rate, higher rates can be used if there is considerable uncertainty about the future. For example, if the firm might move out of Athens before the 10-year period is completed, or might cut its production, higher discount rates could be used to determine the present value.

For example, the city and county could spend up to $56,700 in capital improvements as an inducement to attract a dental equipment manufacturer, at interest rates of 6 percent. Tax rates would not need to be increased, provided the interest rate remained at 6%. But if the rate increased to 14 percent, the city and county could only spend up to $40,100.

Table 16: Capital Expenditures Justified by Local Government for a Dental Equipment Manufacturing Firm

Discount Rate	Present Value of Net Benefits		
	City	County	Total
	---thousands of dollars---		
6%	38.3	18.4	56.7
10%	31.9	15.4	47.3
14%	27.1	13.0	40.1

City and County Cooperation

The benefits and costs from new industry are shared by all units of local government. Table 16 shows how the city and county could divide the costs of attracting one new firm.

For example, at a 10% discount rate, the net gains from the dental equipment manufacturer are divided between the city and county, 67 and 33 percent, respectively. This suggests that the city and county should find means of working together to attract new jobs. These estimates can be used to divide the costs of programs in proportion to the benefits received by each unit.

V: RESOURCES FOR BUSINESS MANAGEMENT ASSISTANCE FEASIBILITY STUDIES

The creation of new enterprises and the expansion of existing businesses are being increasingly advocated as an economic development strategy. Local governments can encourage this process by developing programs to improve business management information and skills.

Efforts to attract outside industries to the county needs additional information on economic, geographic, and locational feasibility studies. If inducements are to be used, fiscal impact studies, similar to those done in this report, need to be done for individual firms.

Several existing programs can provide consultants, resource persons, or the training necessary to conduct feasibility studies. Two potential local programs for business management assistance are briefly outlined.

None of the existing programs provides a complete solution to the need for additional information. Each has some potential for resolving local problems if used in combination with other approaches.

Existing Programs: Business Management

Three agencies provide assistance on economic feasibility studies: (1) the Small Business Administration (U.S. Department of Commerce), (2) the Ohio Cooperative Extension Service (Ohio State University), and (3) the Ohio Technology Transfer Organization (Ohio State University).

The Small Business Administration has four programs that can provide assistance in feasibility studies. They are:

(1) Small Business Institute Program (SBI)

(2) Senior Corps of Retired Executives (SCORE)

(3) Paid Professional Consultants

(4) Business Basic Correspondence Course

The Small Business Institute Program (SBI) provides business management consulting to small businesses. The consulting is done by college seniors or by graduate school students as part of their educational program. This work is supervised by a faculty member in business administration. The report, prepared by the student team, analyzes the firm's management problem and recommends means of correcting it.

The Small Business Administration provides a small amount of funds for each case study to cover costs (approximately $250 per case). There is no charge to the firm for this service. Fifty percent of the cases must be SBA borrowers, but frequently, schools work on non-borrower problems. Since these are part of class projects, preliminary arrangements must be made prior to the quarter in which the course is taught.21/

The Senior Corps of Retired Executives (SCORE) is a type of domestic Peace Corps for small businesses. Retired executives and business persons volunteer 2 to 3 days per week to provide informal training and guidance to small businesses. Office support and travel expenses are paid by the Small Business Administration. There is no charge to the business for this service.

Marietta has a satellite chapter of SCORE. If 12 retired persons in Athens wished to join SCORE, a satellite chapter could be formed here. Prior to that, individuals wishing to participate in SCORE can become members at large with affiliation to the Columbus office.

21/ See Appendix C for a list of contact persons in each program.

The SBA paid professional consultant is available on a limited basis. Priority is given to small manufacturers owned by economically disadvantaged groups in labor surplus areas. An unemployment rate higher than the national average is used to indicate a labor surplus area. Funds for the paid consultants are limited and are used primarily for SBA borrowers. However, others can participate if funds permit.

The SBA correspondence course on business management, "Business Basics," is free to any interested individual. Twenty-three topics are covered, including capital planning, cost controls, marketing strategy, inventory management, and job analysis and specification. The individual can select any of the 23 modules to fit his needs. Through this course individuals may be better prepared to conduct their own feasibility analyses or to work with students, SCORE personnel, or consultants.

The Ohio Cooperative Extension Service has added a fourth area to its traditional programs (agriculture, home economics, and 4-H). Information and research on economic development and community services are available through the Community and Natural Resource Development (C&NRD) agents.

Economic feasibility studies are generally not done directly by either the county or the area C&NRD agents. Usually they serve as a link to state extension specialists at the Ohio State University or at land grant universities in other states. A number of publications are available through the Extension Service on both economic development and community services.

One feasibility study recently initiated by the C&NRD area agent in Jackson examined the use of sawdust. This study was done as a class project in the Department of Agricultural Economics and Rural

Sociology at the Ohio State University. The class examined the alternative uses and markets for sawdust products. Two products, charcoal and wood chips, were identified as potentially feasible. One team estimated costs and returns of a pyrolyzation plant for producing charcoal and low grade gas.

Regional scientists can provide information on tne assets and the liabilities of a region for an entire industry such as tourism, types of manufacturing, or service industries. This information can avoid costly efforts to establish enterprises for which the region has no comparative advantage. By identifying those economic activities for which the county has an advantage, they can increase the effectiveness of local programs to encourage growth.

Annually between 100 and 150 case studies on economic geography issues are conducted by students in OSU's Geography Department. Major emphasis is put on geographic factors influencing the location of industry. Arrangements for this type of case study can be made through the Jackson Area extension agents.

The Ohio Technology Transfer Organization (OTTO), also affiliated with OSU, was initiated in 1976 to provide assistance to small businesses, especially in energy technology. They will serve a similar role to the Cooperative Extension Service. An OTTO area agent is located at Hocking Technical College.

Existing Programs: Fiscal Impact Studies

Information similar to that provided in Sections III and IV of this report can be provided by the GROW Project on specific firms which are considering Athens as a location. This allows consideration of the pros

and cons of tax abatements, extension of water and sewer lines, and annexation issues.

If a local group can provide basic information on the firm and the inducement actions being considered, these impact studies can be done at no charge.

Potential Local Programs

There are two potential programs for assisting existing small businessmen or for doing feasibility studies on new activities: (1) Athens Economic Development Forums and (2) "circuit rider" faculty consultants.

The Athens Economic Development Forum's objective would be to encourage an exchange of views on local economic development issues between business persons, local government officials, developmental agencies, and university faculty.

In 1979 the Ohio Cooperative Extension Service initiated this type of forum in Columbus. The monthly luncheon meeting generally has two speakers: one from the university and one from industry or state government. This informal interaction is strengthening the communication between groups.

A local forum could be initiated by the Industrial Development Commission, by the Chamber of Commerce, and by other groups.

"Circuit rider" faculty consultants would provide a financial incentive for faculty interaction with small business.[22] Consultation by faculty is an effective means of applying university knowledge to

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22/ Shapero describes a similar program and other potential forms of university-industry interaction. Shapero-1979, p. 33-41.

business problems. Shapero suggests that faculty participants be required to find companies to serve rather than waiting for problems to be brought to the university.

Faculty consulting is not always well received by administration and peers. It may, however, contribute to the university's perspective of the need for future, basic research, as well as assist in solving current problems.

Funding for these potential programs may be available through the Ohio Rural Rehabilitation Program (see Appendix D for details).

APPENDIX A

Screening Procedure to Select Nine Best Manufacturing Industries

Twenty of 60 industries suggested by the James Jennings Associates report were eliminated from the analysis of impacts. Three criteria were used to screen the 60 firms originally suggested: (1) land requirements, (2) environmental impacts, and (3) critical labor and material requirements.

The largest industrial site identified in Athens County with sewer and water had 122 acres. The typical firm in one industry, ship building, required more than 122 acres and, consequently, it was eliminated. Two industries were eliminated because they would have severe environmental impacts. These were the manufacturing of pesticides and the primary smelting and refining of lead.

Seventeen additional industries were eliminated from the analysis because less than 80% of the critical labor and raw material requirements were available in the county. These estimates were developed by the Economic Development Administration Industrial Location Service, based on the economic location requirements of each industry and on information about Athens County. The results of their estimates are recorded in the Jennings report, pages E-17 to E-20.

The selection of the nine best industries followed a three-step process. First, the increases in private sector wage incomes and county budget impacts were estimated for the 40 remaining industries. Second, each firm was ranked from 1 (highest) to 40 (lowest) for three factors: (1) income impacts, (2) county budget impacts, and (3) employment growth potential. The last factor was included because it reflects the

pressures which this industry will face during the 1980's. Industries which are projected to grow very slowly or which are projected to have negative rates of growth are unlikely to be relocating. The probability of attracting these firms is very low. The third step was the development of a weighted index in which the growth potential counted twice that of the income and the county budget impacts.

The screening procedure for the nine best industries assumes it is better to concentrate on rapidly growing industries, but that local economic impacts are still important. Additional locational feasibility analysis is needed to assess the potential for attracting these industries.

APPENDIX B

Estimation Procedures

The analysis was conducted on the typical firm in each industry. Typical is defined by the mean employment size. Data on the annual earnings per worker came from Annual Survey of Manufacturers. This was adjusted downward by 19 percent to reflect lower wages paid in Athens County. This reduction was derived by comparing the average weekly wages in the county with those in Ohio for all manufacturing.

Data on the real property and tangible personal property were derived from the Annual Survey of Manufacturers.

Residential location of future workers cannot be predicted with certainty prior to a plant actually locating. Obviously, the residential location will effect not only the costs of providing services, but also the revenues which can be collected.

In this study a gravity model was used to estimate where employees will live. Two factors are considered by the gravity model: size of the community and distance between the community and the plant site. The equations for the gravity model are:

(1) $$\text{Attractiveness Factor of Community A} = \frac{\text{Population of Community}}{[\text{Distance to Industrial Site}](P)}$$

(2) $$\text{Percent Population from New Firm to be from Community A} = \frac{\text{Attractiveness Factor A}}{\text{Sum of Attractiveness Factors from All Communities}}$$

The power (P) must be estimated locally and reflects the willingness to commute. A study by Battelle Memorial Institute in Pike County was used as adequately reflecting Athens County.

Based on this procedure, it was estimated that 56 percent of the employees would be from the city of Athens, 18 percent from the rest of the county, and 26 percent from the neighboring counties. Table B-1 shows the percentage of residents in each location with higher and lower willingness to commute.

Table B-1: Percentage of Employees by Place of Residence and Willingness to Commute

Residential Location	Willingness to Commute		
	Low	Intermediate	High
City of Athes	71	56	33
Rest of County	14	18	22
Neighboring Counties	15	26	45

In-migrant workers were assumed to be salaried workers. The number of in-migrants directly effects the estimate of the additional persons which must be provided with local governmental services. If local residents, who were likely to leave the area, remain to work in a new plant, they have the same impact on local governments as in-migrants. So the assumption used in this research is that salaried workers and their families equals the expanded population. Part of this expansion might be from in-migrants and part of it might be from the reduction in out-migrants.

The analysis assumes the plant remains at the same employment size for 10 years. In fact, this is unlikely. Many plants fail within 10 years while others will either grow or decline. This fact demonstrates the necessity of a careful private feasibility study for potential firms.

Expenditures for county government covers only the general revenue fund items. It is assumed that the cost per person, before inflation, will be the same for new residents as for current residents. Since many of these expenditures are for personnel and not capital intensive services, this seems reasonable. This is difficult to predict accurately. To handle this uncertainty the maximum expenditure per person is estimated at the breakeven level of revenues and expenditures.

Inflation can alter the impacts of a new industry over a period of years. This fact is particularly true if there are differences in the rates of inflation for real estate, local government personnel costs, and wage rates. In this case study the following annual inflation rates were assumed:

Private wages - 9 percent

Governmental costs - 7 percent

Real estate values - 8 percent

Unreimbursed capital expenditures are assumed not to be made by county, city or school district as a result of these plants. It is assumed that the sewer and water systems have sufficient excess capacity to handle the growth related to an individual plant. If several plants are added, then this must be re-examined at each stage of the development.

Table B-2 provides the key data items used for the analysis for the four best industries.

Table B-2: Additional Data on Four Best Manufacturing Industries

Variable	Industry A*	B	C	D
Residential Location (percent)				
Initial Data				
In city	.43	.40	.36	.41
Rest of county	.14	.13	.12	.13
In-migrants	.24	.32	.36	.28
Commuters	.20	.18	.17	.19
Alternative 1				
In city	.54	.48	.45	.51
Rest of county	.11	.10	.09	.10
In-migrants	.24	.32	.36	.28
Commuters	.11	.10	.10	.11
Alternative 2				
In city	.26	.22	.22	.25
Rest of county	.16	.15	.13	.15
In-migrants	.24	.32	.36	.28
Commuters	.34	.31	.29	.32
Real Property (in thousands)	$217	$170	$415	$490
Tangible Property (in thousands)	$822	$733	$1565	$2161
State & Federal Aid to County (in thousands)	$.8	$1.1	$2.7	$2.2

*A = Transportation Equipment (SIC=3799)
B = Dental Equipment (SIC-3843)
C = Surgical Instruments (SIC=3841)
D = Fabricated Platework (SIC=3443)

APPENDIX C

Contact Persons for Economic Development Programs

Cooperative Extension Service: Athens County

Betty Reese
County Extension Agent, Home Economics & CNRD
280 W. Union Street
Athens, OH 45701
614/593-8555

Cooperative Extension Service: Jackson Area Center

Sam Crawford
Area Extension Agent, Community & Natural Resource Development
Jackson Area Extension Center
P. O. Box 32
Jackson, OH 45640
614/286-2177

George Morse
Resource Economist
Jackson Area Extension Center
P. O. Box 32
Jackson, OH 45640
614/286-2177

Small Business Institute

Victor Grieco
Professor of Business Admin.
414 Copeland Hall
Ohio University
Athens, OH 45701
614/594-5906

Senior Corps of Retired Executives (SCORE)

J. W. Kroeger
SCORE
Small Business Administration
85 Marconi Boulevard
Columbus, OH 43215
614/469-5548

Other SBA Programs

Doug Sweazy
S.B.A.
85 Marconi Boulevard
Columbus, OH 43215
614/469-5549

The Ohio Technology Transfer Organization (OTTO)

Walter Selvage
OTTO
Hocking Technical College
Route 1
Nelsonville, OH 45764
614/753-3591

Federal Programs

Jeff Burt
Director of Planning
Buckeye Hills-Hocking Valley Regional Development District
216 Putnam Street
Suite 410, St. Clair Building
Marietta, OH 45750
614/374-9436

State Programs

Gordon Waltz
Department of Economic and Community Development
P. O. Box 1001
Columbus, OH 43216
1-800-282-1085

Local Programs

John Jones
Executive Director
Athens Area Chamber of Commerce
OU Inn
Athens, OH 45701

Frank Hamilton
Executive Director
Athens Small Business Center
24-1/2 E. State Street
Athens, OH 45701

APPENDIX D

OHIO RURAL REHABILITATION PROGRAM

Background:

The Ohio Rural Rehabilitation Program is designed to provide funds for projects benefitting rural Ohio communities and low income Ohio farmers. The original funds were provided by the U.S. Congress during the 1930's. Rural Rehabilitation Corporations were formed in various states to aid rural areas during the depression years. Early in 1970, the U.S. Government liquidated these corporations and turned the money order over to the states to administer under terms of a Use Agreement with the U.S. Department of Agriculture.

Purpose:

The primary purpose of the program is to support projects that will generate economic activity in low income segments of the rural community. An example of one successful project which received its initial funding from the Rural Rehabilitation Program is the "Build Our American Communities" (BOAC) program sponsored by the Future Farmers of America.

Application:

Any non-profit organization or any individual may apply for funds. A detailed explanation of the operation and financing plans must be submitted for consideration. The Ohio Department of Agriculture had established a Rural Rehabilitation Advisory Committee to evaluate all applications and make recommendations for approval to the Director of Agriculture.

Further information on submitting applications for consideration by the Advisory Committee may be secured by writing: Ohio Rural

Rehabilitation Advisory Committee, Ohio Department of Agriculture, 65 S. Front Street, Columbus, Ohio 43215.

General Guidelines:

The Ohio Rural Rehabilitation Program operates under a "Use Agreement" between the U.S. Department of Agriculture and the Ohio Department of Agriculture. The following are general guidelines of the purpose and function of Rural Rehabilitation Funding.

1. The primary purpose of the program is to support projects that will generate economic activity and/or benefit low income segments of the rural community.

2. Interested organizations sponsoring projects must be non-profit in nature.

3. A written request for funds must be made giving details of the proposed project.

4. Applications for both loans and grants may be considered, provided:

   A single grant does not exceed $25,000.

   A single loan does not exceed 50% of the interest income accruing to the fund annually.

   The interest rate established on a loan to an approved project shall be reasonable and may vary based upon risks involved.

5. Responsible individuals in sponsoring organizations will be asked to sign appropriate agreements pertinent to the loan.

6. An annual report will be required on the progress of the program receiving Rural Rehabilitation Funds.

APPENDIX E

Enrollment and Employment at Ohio University

Linear regression analysis was used to check the relationship between enrollment and employment at Ohio University. This procedure shows the correlation between the variables and also demonstrates how rapidly employment changes as enrollment changes. For more detail on the procedure, see Kmenta.

Data for enrollment and employment at Ohio University were examined for 1970 through 1979 (see Table E-1). Both data sets include branch campuses, although the primary interest is in the main campus. Since the branch campuses are small relative to the main campus, this approximation should not bias the results.

When only enrollment is considered, the following results were obtained:

$Y = 894.24 + .2387X_1$ $\quad R^2$ .9362

where:

Y = OU employment

X_1 = OU enrollment

This can be interpreted as meaning that for each new student the total employment increases by .24 persons or that for every 4 new students there would be 1 new employee. And with the reduction in students, the number of employees would fall.

When a time trend is added to the regression equation, the relationship between students and employees is reduced somewhat. The equation is as follows:

$Y = 416.81 + .1837X_1 - 48.8333X_2$ $\quad R^2 = .9471$

Table E-1

Enrollment and Employment at Ohio University, 1970-1979*

Year	Enrollment	Employment
1970	23,919	4613
1971	23,933	4569
1972	22,009	4596
1973	19,605	4002
1974	16,754	3391
1975	16,321	3007
1976	16,313	2919
1977	16,666	2976
1978	17,043	3026
1979	16,951	3201

*Data includes branch campuses.

This can be interpreted as showing that for every 5.4 students there is one employee.*

With a current enrollment at the main campus of 13,194 and with a 10 percent decline in enrollment, the employment would be expected to fall by 237 to 316 persons.

* In both cases the R^2 is very high suggesting statistically significant regression coefficients. These regressions were run on a TI-59 Programmable Calculator. This machine does not calculate the standard errors of the regression coefficient so the standard t test cannot be used.

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